RFPF 1000 01 (5/95)
Formerly RF-47940

RF/ER-96 0043.UN

Document Modification Request

Originator

Print or Type all information (except signatures) Process procedures in accordance with 1 A01 PROC DEV-400 Procedure Process

25 **DMR No** 96-DMR-ERM-0036

1 Name/Phone/Pager/Location: Hopi Salomon / 6627 / 5129 / T893B

2 Date: August 5, 1996

3 Existing Document Number and Revision:

4 Document Type ☐ Procedure ☒ Plan ☐ Other

5 Document Title: FIELD SAMPLING PLAN TO SUPPORT THE FINAL DISPOSITION OF TREATED SOIL FROM THE RYANS PIT SOURCE REMOVAL PROJECT

6 Item	7 Page	8 Step	9 Proposed Modification
			New Document

10 Item	10a Justification (reason for modification EJO # TP # etc)
	New Document

Originator's Supervisor

11 ☑ Process ☐ Do not Process (state reason in Block 10a) (print/sign/date) Ann Tyson [signature] 8/1/96

12 ☐ Process (Complete Blocks 13 22) ☐ Do not Process (state reason in Block 10a) (print/sign/date)

13 New Document/ Rev No (if new or changed)

Complete either Section 14a or 14b as applicable For procedures attach completed Procedure Modification Worksheet from 1 A01 PROC DEV-400

14a. Type of Complete Modification: ☒ New ☐ Revision ☐ One-Time-Use ☐ Cancellation

14b Changes (check all that apply): ☐ Intent Change ☐ Editorial Correction ☐ Nonintent Change ☐ Regular ☐ Interim Approval Requested Needed for Immediate Use (14 day limit for obtaining final approval)

Additional Attributes: ☐ Temporary ☐ One-Time-Use ☐ Limited Distribution

15 ERM Change Control Board Required ☐ Yes ☒ No (Applicable only to new procedures revisions and intent changes)

List the reviewing disciplines in Block 16 After concurrence has been obtained (in accordance with 1 A01 PROC DEV-400) enter the name of the reviewer followed by /s/ in block 17 If the reviewer indicates *No comments*, the review signature constitutes concurrence Enter the date concurrence is obtained in Block 18

16 Organization	17 Reviewer/Concurror	18 Date	16a Organization	17a Reviewer/Concurror	18a Date
RMRS QA	R S LUKER [signature]	8/1/96			
K-H RIEG	[signature] / R S Roberts	7/31/96			
K-H Rad Eng	[signature] / S Anders	7/31/96			
KHRE	[signature] BPColby	7/31/96			
/					

19 Assigned SME/Phone/Pager/Location

20 Cost Center

21 Charge Number

22 Requested Completion Date

23 Prescreen/Screen/USQD Number

24 Independent Safety Review Meeting and Date

26 After obtaining ALL required signatures Responsible Manager's Approval (print/sign/date) (Not required for New procedures or Revisions): Ann Tyson [signature] 8/1/96

27 Effective Date

28 Expiration Date (if applicable)

ADMIN RECORD

RF/ER-96-0043.UN

FIELD SAMPLING PLAN TO SUPPORT THE FINAL DISPOSITION OF TREATED SOIL FROM THE RYAN'S PIT SOURCE REMOVAL PROJECT

Rocky Mountain Remediation Services, L.L.C.

July 31, 1996

Revision 0

TABLE OF CONTENTS

ACRONYMS

ASTM	American Society for Testing Materials
CDPHE	Colorado Department of Public Health and Environment
COC	Chain of Custody
EPA	Environmental Protection Agency
EMD	Environmental Management Department
FSP	Field Sampling Plan
HPGe	High Purity Germanium
IHSS	Individual Hazardous Substance Site
MDA	Minimum Detectable Activity
OU	Operable Unit
PAM	Proposed Action Memorandum
QA	Quality assurance
QC	Quality control
RFCA	Rocky Flats Cleanup Agreement
RFEDS	Rocky Flats Environmental Database System
RFETS	Rocky Flats Environmental Technology Site
SOPs	Standard Operating Procedures
TCLP	Toxicity Characteristic Leaching Procedure
TDU	Thermal desorption unit
VOCs	Volatile organic compounds
yd^3	Cubic yard

LIST OF STANDARD OPERATING PROCEDURES

Identification Number	Procedure Title
5-21000-OPS-FO 03	*General Equipment Decontamination*
5-21000-OPS-FO 13	*Containerization, Preserving, Handling and Shipping of Soil and Water Samples*

FO – Environmental Management Division (EMD) Operating Procedures Volume I Field Operations

1.0 SITE BACKGROUND

This Field Sampling Plan (FSP) was developed to support the proper disposition of soils excavated from Individual Hazardous Substance Site (IHSS) 109 (Ryan's Pit) at the Rocky Flats Environmental Technology Site (RFETS) Because of contamination from volatile organic compounds (VOCs), the soil from this site was contributing to the degradation of downgradient groundwater As a result, the soil was excavated in the fall of 1995 and subsequently treated during the winter of 1995-1996 A mobile thermal desorption unit (TDU) was used to remove the VOCs from the contaminated soils The following decision and sampling documents were used to set requirements for the project

- *Final Proposed Action Memorandum for the Remediation of Individual Hazardous Substance Site 109, Ryan's Pit*, RF/ER-0097 UN, August 24, 1995
- *Modification to the Proposed Action Memorandum for the Remediation of Individual Hazardous Substance Site 109, Ryan's Pit*, RF/ER-0097 UN, February 21, 1996
- *Proposed Action Memorandum and Draft Modification of the Corrective Action Section of the Operating Permit for Rocky Flats Environmental Technology Site*, November 6, 1995
- *Sampling and Analysis Plan for the Remediation of Ryan's Pit, Operable Unit 2*, Rev 5, August 28, 1995

After treatment, soils met the VOC treatment performance standards stated in the *Proposed Action Memorandum and Draft Modification of the Corrective Action Section of the Operating Permit for Rocky Flats Environmental Technology Site* for the Ryan's Pit project As established by the Colorado Department of Public Health and Environment (CDPHE), these soils, which initially carried listed hazardous waste codes F001 and F002, no longer "contained" the hazardous waste constituents and were thus no longer regulated as hazardous waste

A final summary of the project is being developed for the *Completion Report for the Remediation of Individual Hazardous Substance Site 109, Ryan's Pit*, draft, 1996

The treated soil, stored in ten roll-off containers, was slated for return to the original Ryan's Pit site This soil was sampled for radionuclide content in roll-offs prior to treatment Following treatment, the soil was commingled with soil from other roll-offs, and for that reason, identification of radionuclide activity levels by roll-off container may not be possible

2.0 SAMPLING OBJECTIVES

The purpose of this sampling effort is to collect data to support the following objective

- To determine if Ryan's Pit soil meets the radiological "put back" action levels developed by the Rocky Flats Cleanup Agreement (RFCA) Working Group These levels are found in the document *Action Levels for Radionuclides in Soils for the Rocky Flats Cleanup Agreement, Preliminary Draft*, June 27, 1996

An extensive amount of data already exists from Ryan's Pit Some of the data was collected before excavation, some after excavation, and some data was collected to evaluate the treatment performance The analysis required for this sampling activity for the characterization of the soil for radionuclides is Gamma Spectrometry using a high purity germanium (HPGe) detector The HPGe analysis will be conducted in accordance with Radiological Engineering Procedure 14 01, Operation of the Nomad Portable Gamma Spectroscopy System This procedure has also been approved to evaluate the "put back" of potentially radiologically contaminated soils from the T-3/T-4 remediation project

The Minimum Detectable Activity (MDA) of the HPGe detector will be set so that activities of Am^{241}, Pu^{239}, U^{234}, U^{235}, and U^{238} can be either directly measured with the HPGe detector or calculated from the direct measurement The MDA for each radionuclide will be chosen so that the sum of the fractions of the MDA divided by the Tier II soil action levels for all radionuclides present will be below 1 0

The Ryan's Pit soil (after excavation, placement in roll-offs, removal from roll-offs for treatment, and subsequent return to roll-offs after treatment) has been greatly mixed (homogenized) Because of the homogenization and a significant amount of data already available, three samples will be collected from the surface of each of the roll-offs The results of these analysis will be used to determine if Ryan's Pit soil meets the radiological "put-back" action levels developed by the Rocky Flats Cleanup Agreement (RFCA) Working Group If this determination can be made, a significant amount of money can be saved by returning the soil to Ryan's Pit If the soil cannot be returned to Ryan's Pit, additional evaluation will be required prior to final disposition

Fundamental quality controls are in place for the HPGe measurement system for the Ryan's Pit soils, just as they were for the soils from trenches T-3 and T-4 The primary controls of HPGe measurements resides in the pre and post energy calibration of the system based on established radiological standards These standards are documented in Radiological Engineering Procedure 14 01 (ibid) Because of the existing quality controls and the justification given below, the following "typical" quality control (QC) samples are not being collected for this project

- Rinsates (equipment blanks) are not being collected because a well-established, proven procedure is being followed to decontaminate reusable sampling equipment between sample points as described in Section 5 0 of this Field Sampling Plan Additionally, if problems did exist in the equipment decontamination procedure, the possible levels of introduced cross contamination would be insignificant when compared to the performance levels (Tier I or Tier II) required to evaluate disposition of the soil

- Duplicates are not being collected because of the relative homogeneity of the soil matrix resulting from the previous mixing of the soil and the fact that three real samples are to be collected from individual roll-off containers This will provide adequate information relative to sample variability

- Splits are not being required as part of this investigation because of the inherent QC (such as pre/post source checks) required by the HPGe operating procedure defined earlier in this Section Further, regulators are not requiring independent, off-site analysis for the purpose of corroborating HPGe results The HPGe methodology is established well enough to accomplish the data quality objectives of this project

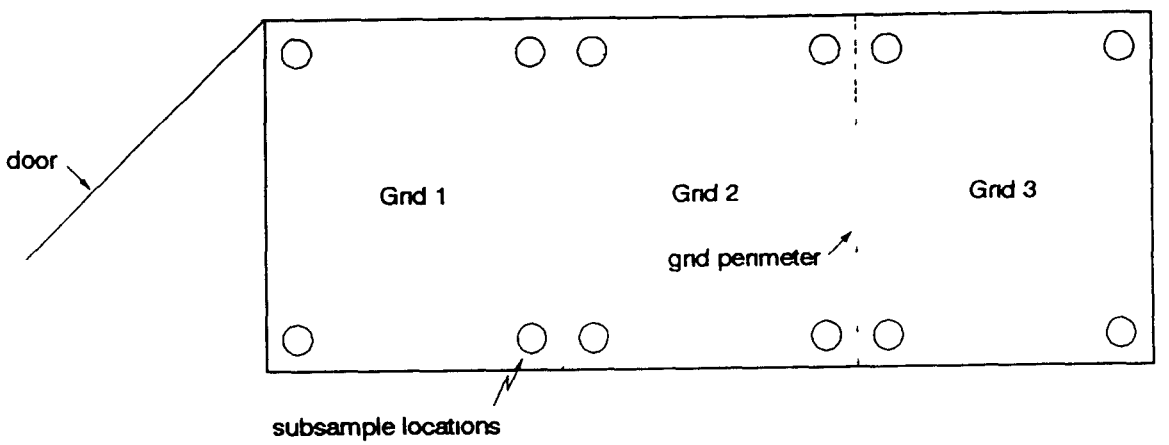
3.0 SAMPLE LOCATION AND FREQUENCY

Three composite samples will be collected from each of approximately ten roll-off containers as recommended by Kaiser-Hill Radiological Engineering To facilitate a safe sampling approach, samplers will collect samples from the sides of the roll-offs so that they are not required to climb on top of the roll-offs (e g , required if collecting samples from the roll-off's interior) The samples will be collected by dividing each roll-off container into three equal area rectangular grids along the lengthwise axes of the roll-off (Figure 3-1)

Four subsamples will be collected from the surface of the roll-off at the corners of each individual grid (Figure 3-1) These subsamples will be thoroughly mixed (homogenized) and a single sample collected from the composited soil to represent that individual grid

The following roll-offs contain treated soil and will be sampled as part of this investigation Roll-offs A, B, C, D, E, F, H, K, L, and M Two other roll-offs that are not part of this investigation contain treated debris (roll-off N) and topsoil (labeled as such)

Figure 3-1 Roll-Off Container Grid and Subsample Locations



4.0 SAMPLE DESIGNATION

The site standard sample numbering system will be used for this project Each sample will be assigned a unique nine digit number The unique sample numbers have been assigned to the project by the Rocky Flats Environmental Database System (RFEDS) group The range of sample numbers used for this project are TR00501RM – TR00550RM The Location Codes used for this project are Rolloff_A1 – Rolloff_N3 The alphabetical character located after the underscore indicates the present roll-off designation (A-N) The subsequent numerical characters (e g , 1-3) indicate the grid location in each roll-off Grid location "1" will be used to designate the grid location next to the roll-off door, while grid 2 will be the center grid and grid 3 will be farthest from the roll-off door (see Figure 3-1)

After sampling, a matrix will be developed which correlates the individual sample numbers to location codes

5.0 SAMPLING EQUIPMENT AND PROCEDURES

Depending on availability, samples will either be collected using disposable plastic sampling scoops and plastic bags (used to homogenize subsamples) or will be collected using stainless steel scoops/spoons and mixing bowls If stainless steel sampling equipment is used, the equipment will be will be decontaminated in accordance with EMD Operating Procedure 5-21000-OPS-FO 03, *General Equipment Decontamination, Section 5 3 1, Cleaning Steel or Metal Sampling Equipment Without Steam in the Field* All other sampling equipment will include standard items such as chain of custody seals and forms, logbooks, general decontamination equipment, etc Samples will be collected from the top surface of the roll-offs in a simple manner as described in Section 3 0

6.0 SAMPLE HANDLING AND ANALYSIS

Samples collection will follow *Environmental Management Department (EMD) Operating Procedures Volume/Field Operations 5-21000-OPS-FO 13, Containerization, Preserving, Handling, and Shipping of Soil and Water Samples, Volume 1* Samples will be placed in 250-milliliter wide-mouth plastic jars which the HPGe detector is calibrated for

Field data will be recorded in a project logbook The originator shall authenticate (legibly sign and date) each completed original hard copy of data A peer reviewer, someone other than the originator, shall perform a peer review on each completed original hard copy of data Any modifications shall be lined through, initialed, and dated by the reviewer (in ink)

At project closeout, the original quality records (i e , hard copies and digital records) will be submitted to the RMRS Records Center (Note Digital files must be labeled with indelible ink and communicate at least the file name(s) and hardware and software platforms)

7.0 REFERENCES

Final Proposed Action Memorandum for the Remediation of Individual Hazardous Substance Site 109, Ryan's Pit, RF/ER-0097 UN, August 24, 1995

Modification to the Proposed Action Memorandum for the Remediation of Individual Hazardous Substance Site 109, Ryan's Pit, RF/ER-0097 UN, February 21, 1996

Proposed Action Memorandum and Draft Modification of the Corrective Action Section of the Operating Permit for Rocky Flats Environmental Technology Site, November 6, 1995

Sampling and Analysis Plan for the Remediation of Ryan's Pit, Operable Unit 2, Rev 5, August 28, 1995

Completion Report for the Remediation of Individual Hazardous Substance Site 109, Ryan's Pit, draft, May, 1996

RMRS, 1995 *Quality Assurance Program Plan (QAPP)* 95-QAPP-001 Golden, Colorado October 1995

U S Department of Energy *Action Levels for Radionuclides in Soils for the Rocky Flats Cleanup Agreement, Preliminary Draft*, June 27, 1996